



PRIME CENTER

SAINT LOUIS UNIVERSITY

Better evidence, better policy, better schools

DEPRESSED: THE IMPACT of THE GREAT RECESSION on TEACHER SALARIES

James V. Shuls, Ph.D.
November 2023



prime@slu.edu



[@SLU_PRIME](https://twitter.com/SLU_PRIME)



[SLU_PRIME](https://www.facebook.com/SLU_PRIME)



sluprime.org



Table of Contents

Key Points	1
Introduction	2
Literature Review	4
Data and Methods	7
Results	9
Discussion and Conclusions	15
References	18

Please Cite As:

Shuls, J. V. (2023, November) Depressed: The Impact of the Great Recession on Teacher Salaries. PRiME Center. Saint Louis University. <https://www.sluprime.org/education-reports-database/impcat-of-great-recession-on-teacher-salaries>



How the Great Recession Affected Teacher Wages

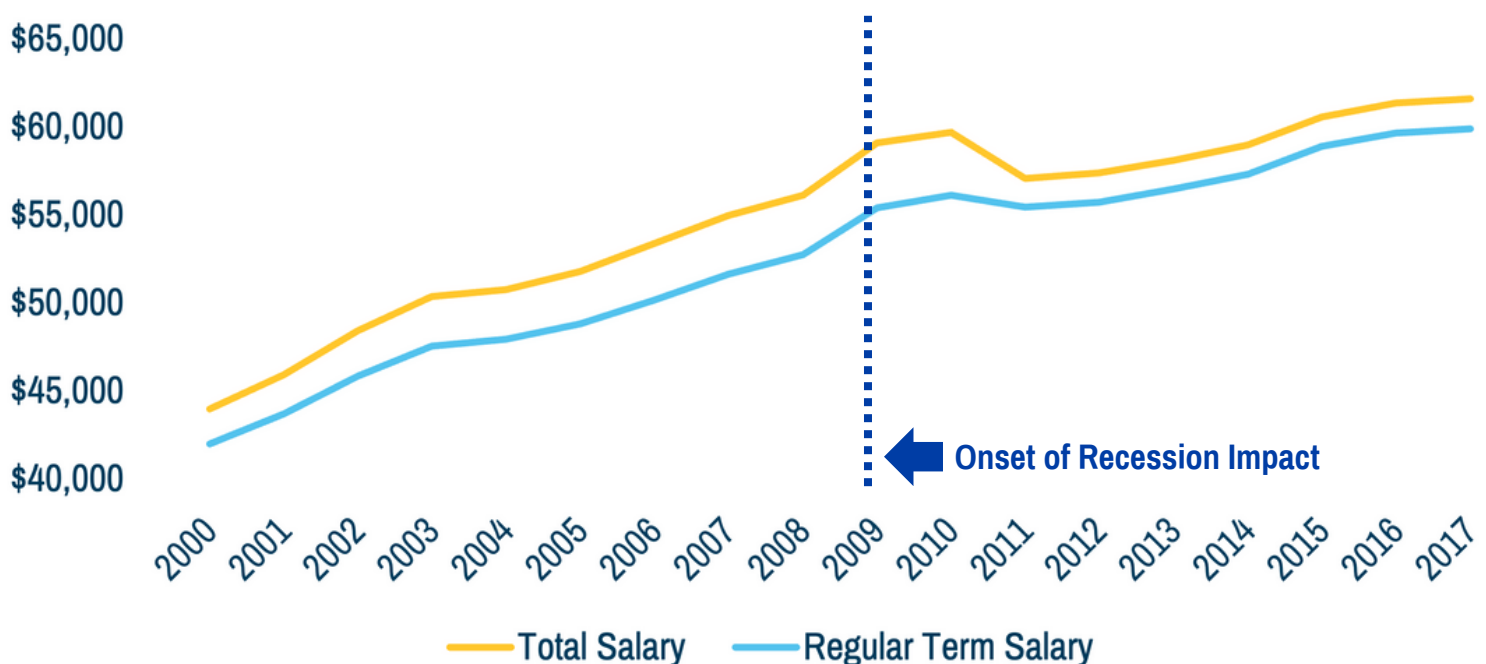
PRIME CENTER
SAINT LOUIS UNIVERSITY

This report shows how Missouri teachers saw reduced wages after the Great Recession.

Key Findings:

- After the recession, Missouri teachers' average total salary was \$2,960 lower for new teachers and \$2,612 lower for veteran teachers as compared to pre-recession average total salaries.
- In 2017, Missouri teachers earned around \$5300 less in total salary than they would have earned if their earnings trajectory matched that of their earlier peers.
- In public opinion polls, the public regularly states that teachers are underpaid.

Average Salary of Missouri Teachers (Inflation-Adjusted)



Methods:

We compare total salary (which includes stipends for coaching, tutoring, and more) and regular term salary (salary without stipends) for two cohorts of Missouri teachers. The first cohort, tracked from 2000 to 2009, was relatively unaffected by the recession, as federal aid delayed the effects of the financial crisis. The second cohort, tracked from 2009 to 2018, bore the brunt of post-recession salary cuts.

In December 2007, the United States economy entered into a major recession.¹ Over the next year, housing prices declined, stock prices dropped, and effects were felt throughout economy. As Kalleberg and Von Wachter note, “It was the longest recession since the Great Depression.”² From 2007 to 2009, the Gross Domestic Product (GDP) of the United States and number of jobs fell by roughly six percent, while median household income fell by roughly eight percent.³ Public education, which relies heavily on local property taxes and state support from income taxes,⁴ was significantly impacted by these events.

The full brunt of these effects, however, was not initially felt due to two federal stimulus programs. The American Recovery and Reinvestment Act (ARRA) “provided \$100 billion in stimulus funds to states—much of it used for education—and EduJobs provided another \$10 billion for funding”.⁵ This led to a short-lived but major infusion of federal dollars. Nevertheless, after the expiration of federal stimulus funds, the recession did eventually impact public education spending and in the wake of the great recession, most states cut school funding.⁶

In an analysis of state budget documents, The Center on Budget and Policy Priorities found that 31 states provided less state funding per pupil in 2014 than they had prior to the recession, when adjusted for inflation.⁷ In Missouri, the state cut per student funding by 5.4 percent in inflation-adjusted dollars from 2008 to 2014. This ranked the state 23nd in terms of the size of cuts in funding, with Arizona coming in first with a staggering -23.3 percent cut.

Hence the question: what was the impact of these fiscal challenges on teacher salaries? More specifically, what happened to teacher salaries during the Great Recession and have salaries have recovered in the intervening years (before COVID-19)? To answer these questions, I use individual teacher salary data from Missouri. I first examine wages from 2000 to 2017, a time period in which the recession falls directly in the middle. Next, I examine two cohorts of teachers pre- and post-recession. The first cohort consists of new teachers who start in 2000 and work continuously as a teacher for nine years in Missouri. I then compare these teachers to new teachers in 2009 who work continuously for nine years. I also compare veteran teachers with ten years of experience in 2000 and in 2009. All salaries are adjusted to 2017 dollars. This strategy allows for an estimation of the effect of the Great Recession on teacher salaries.



Before delving into the details of the analysis, it is important to understand the larger landscape regarding teacher salaries and how school districts responded to the recession. Depending on the timeframe used, teacher salaries across the United States are struggling to keep pace with inflation. Looking from 1992 to 2014, Scafidi found that per-student spending had increased by 27 percent.⁸ Meanwhile, teacher salaries were down by roughly two percent during this period. Analyzing a shorter period, from 2003 to 2016, Chang found that average teacher pay was down three percent nationally and 2.3 percent in Missouri.⁹ The National Education Association reports that teacher salaries fell four percent in inflation-adjusted dollars from 2009 to 2018.¹⁰

These analyses all face one potential problem: they rely on average teacher salaries, which can be impacted by a variety of factors not directly related to teacher pay rates. For instance, average pay can be influenced by staffing patterns. If a school district is hiring more new teachers, who start out at lower pay, the average of a school district may decline. This decline, however, would not reflect any real changes in the pay structure of the school district. As Simpkins, Roza, and Simburg state:

“Differences in each year’s average salary can be heavily influenced by layoffs, which could cause a jump in the average by eliminating the most junior, and thus lowest-paid, teachers. Similarly, a bump in retirements could make the average drop, even though there was no reduction in any teacher’s pay”.¹¹

As such, an important policy consideration is what happens to the wages of continuously working teachers. Simpkins, Roza, and Simburg use data from Seattle Public Schools to address this issue.¹² They identify 1,252 full-time teachers who were working consistently from 2006 to 2011, a period of time which encompasses the Great Recession. They found that these teachers increased their pay from \$54,436 to \$75,383 over this period, an increase of 38 percent. Notably, the wages were rising sharply until the recession reached its midway point in 2008. After this point, raises decreased considerably to two percent in fiscal year 2010 and one percent in 2011.

The analysis in Seattle suggests the school district did not fully start reacting to the recession until the 2009-10 school year, well after the recession hit the economy. This same phenomenon occurred in other states, such as New York¹³ and New Jersey¹⁴, where districts continued to increase teacher salaries in the years just after the recession's start. However, though teacher pay continued to rise after the recession, raises were smaller than they had been previously. In an analysis of 41 of the nation's largest school district, the National Council on Teacher Quality (NCTQ) found raises to be "one-third to one-half of what they were at the start of the recession."¹⁵

This delayed reduction in teacher raises fits the fiscal circumstances of school districts at the time. As previously noted, federal stimulus programs limited the impact of the recession on schools in the years immediately during and after the recession. As these funds dried up, however, school districts faced greater pressure to make significant changes in staffing and/or salaries. One way districts did this was through Reductions in Force (RIF),¹⁶ or layoffs, whereby school districts make cuts to their workforce. Typically, the district will notify some teachers in the spring that they may potentially lose their job as part of a reduction in force. Then, the district will later send official layoff notices to some portion

of those teachers.¹⁷ In a survey of 396 public management and human resources personnel, respondents indicated that over 60 percent had engaged in hiring freezes, more than 40 percent layoffs, 30 percent, furloughs, and a host of other strategies, such as early retirement incentives or buyouts¹⁸.

Many of the managers in the survey - over 60 percent - also indicated their organization had frozen pay in response to financial stress. Most teachers are paid via a single salary schedule which spells out exactly what they will earn each year¹⁹. Thus, most teachers naturally get raises with each additional year of experience. School districts can “freeze” teachers at their current step, meaning they do not proceed to the next rung on the pay scale as they would under normal conditions. Additionally, districts can add a “phantom step,” as NCTQ calls it,²⁰ keeping teachers at their current pay for an additional year. NCTQ found that 33 of the 41 studied school districts froze or cut pay over the four-year period from 2009 to 2012, often using one of these means²¹.

The previous studies on teacher salaries have tended to examine whether average salaries have kept pace with inflation in each state. Few studies have sought to examine the impact of the Great Recession on teacher salaries. Those that did were conducted shortly after the recession. To my knowledge, no study has used individual teacher salary data from an entire state to assess the impact of the recession on teacher salaries.



I obtained individual teacher salary data from the Missouri Department of Elementary and Secondary Education. These data include, for the years 2000 to 2017, each teacher's salary reported as their regular term salary and their total salary. Regular term salary is the amount of pay teachers are contracted to receive for regular teaching duties, while total pay includes stipends for coaching, tutoring, or other types of extra duties. The data also indicate whether the individual was employed as a teacher or administrator. In the analyses that follow, I drop all individuals who moved into an administrative role. Thus, the analyses focus only on teachers.

In the first analysis, I examine the earnings trajectory of individuals who worked consistently as a teacher for the entire 18-year period. This means these individuals did not leave the classroom for an administrative job, a non-teaching job, or a leave of absence. I adjust these salaries for inflation. This first cut of the data allows us to visually see the impact on teacher salaries following the great recession.

Next, I refine the analysis to individuals who worked consistently as a teacher for nine straight years in two time periods, 2000 to 2008 and 2009 to 2017. These periods are divided by the Great Recession which initially began in late 2007 but did not fully impact public school finances for a couple of years because of an influx of federal funds. I further limit the data to two sub-samples - new teachers and teachers with 10 years of experience at the beginning of each period. As a result, I have four groups of individuals. This allows me to control for the possibility that the workforce may have been changing during these time periods.

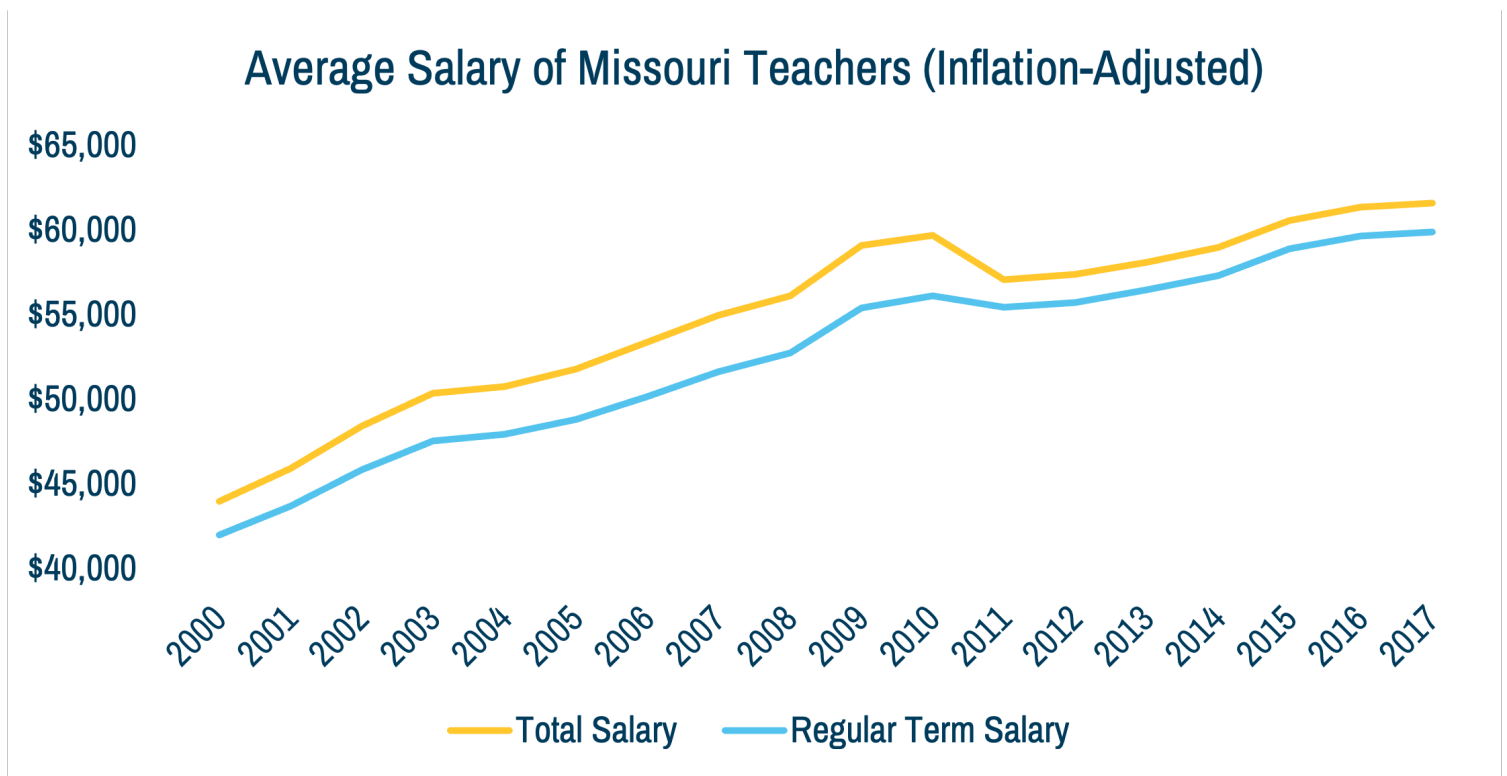
Sample Size of Each Analysis:	
Analysis	Number of Teachers
Continually Working Teachers, 2000-2017	13,054
New Teachers, 2000	2,048
New Teachers, 2009	2,034
10-Year Veteran Teachers, 2000	1,246
10-Year Veteran Teachers, 2009	1,870

I then adjust total and regular term salaries for each year to 2017 dollars. This allows me to compare salary growth of the new and veteran groups pre-Great Recession and post-Great Recession. By examining total and regular term salary, I am able to estimate how much of the difference in salary is due to salary schedule factors and how much is due to a limitation on extra pay for extra duties.

Finally, I estimate how much salaries would be in 2017 if the Great Recession had not impacted school finances. To do this, I calculate the average annual raise for new and veteran teachers from 2000 to 2008. I then apply those annual raises to the 2009 salary of the two groups. This allows me to examine what current salaries would be for those groups of individuals if they had stayed on the same earnings trajectory as their counterparts in the earlier time period.



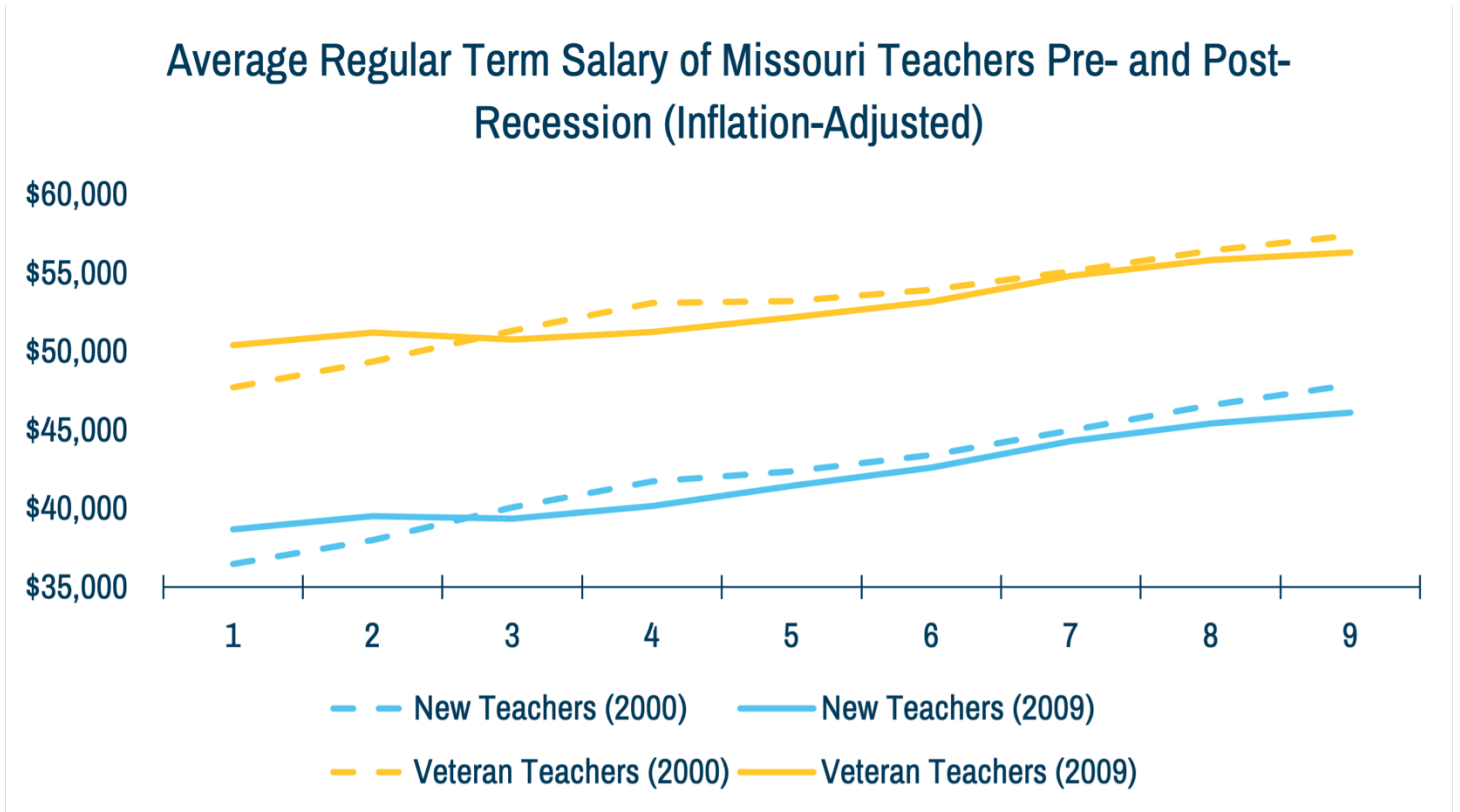
In the figure below, I display the average salary for continuously working teachers from 2000 to 2017. This figure includes all individuals regardless of experience, provided they worked for the entire 18-year period as a teacher. The figure contains a line for regular term salary and total salary. Prior to the recession, the gap between regular term salary and total salary was widening. Following the recession, both regular term and total salaries dipped. The biggest impact was on total salary, leading to a narrowing of the gap between the two. This gap has stayed consistent since the recession and did not recover to pre-recession levels by the end of this analysis in 2017.



During this time period, regular term and total salary for consistently working teachers increased by similar amounts, more than \$17,000 in inflation-adjusted dollars. This represents a salary increase over 40 percent. The bulk of the growth occurs in the years leading up to the recession. From 2000 to 2008, regular term salary increased by over \$10,000. In comparison, regular term salary increased by just \$4,400 from 2009 to 2017. Notably, there is a dip in the average total and regular term salary following the recession. This may be due, in part, to school districts offering buy-outs to veteran teachers. In other words, part of the story here may be compositional changes to the teacher workforce. I attempt to net out this impact in the following analyses.

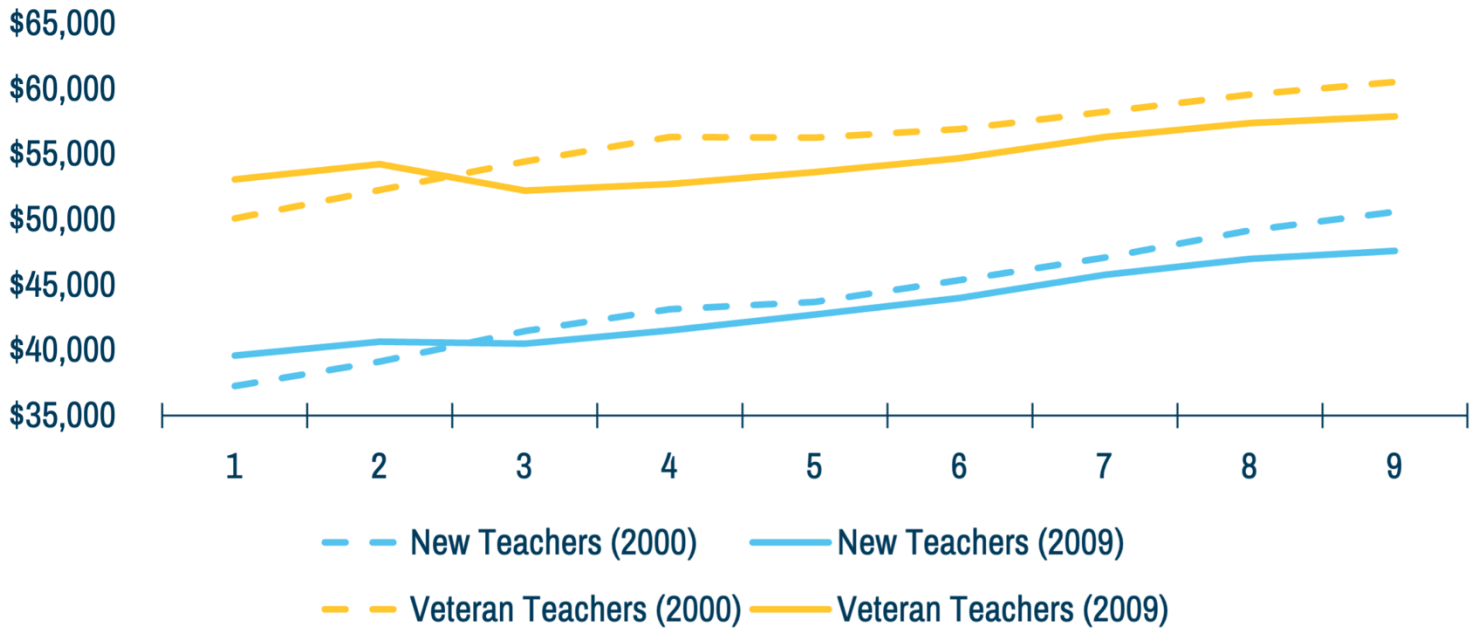
To better examine the impact of the recession on salaries, and not capture compositional changes to the workforce, I divide the sample into two time periods: Pre-recession and Post-recession. I then plot the wage growth in inflation-adjusted dollars for new teachers and teachers with 10 years of experience beginning in 2000. Once again, I only include individuals who worked continuously as a teacher during this time period. I then plot the wage growth for new and veteran teachers in 2009. This allows me to compare the wage growth of a new teacher in 2000 to the wage growth of a new teacher in 2009, and a veteran teacher in 2000 and 2009.

Figure 2 below displays a comparison of regular term salary for new and veteran teachers pre and post-recession. Regular term salaries represent the amount teachers are contracted to receive for regular teaching duties. The X-axes track the passing years of the study term, as 1 represents 2000 or 2009 for each respective cohort.



Meanwhile, Figure 3 below displays the comparison using total salary. Again, total salary includes additional compensation such as tutoring or coaching stipends.

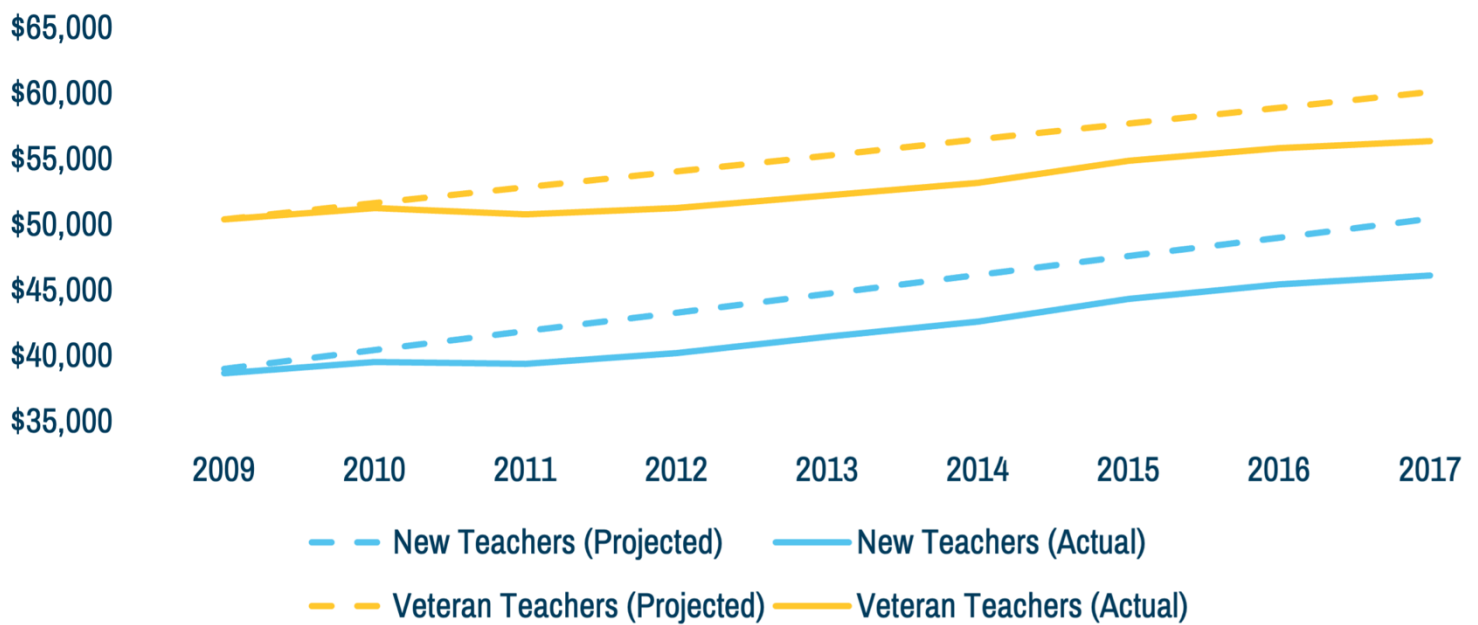
Average Total Salary of Missouri Teachers Pre- and Post-Recession (Inflation-Adjusted)



As both figures show, wages for new and veteran teachers began higher in 2009 than they were in 2000. Shortly afterward, however, as the recession hit, wages for the 2009 cohorts dipped below the wages for the 2000 cohorts and never fully recovered. After nine years, regular term salaries for teachers post-recession were below those of pre-recession teachers by \$1,091 for the new teacher cohort and \$1,786 for the veteran cohort. The differences were larger when examining total salary, \$2,960 for new teachers and \$2,612 for veteran teachers, respectively.

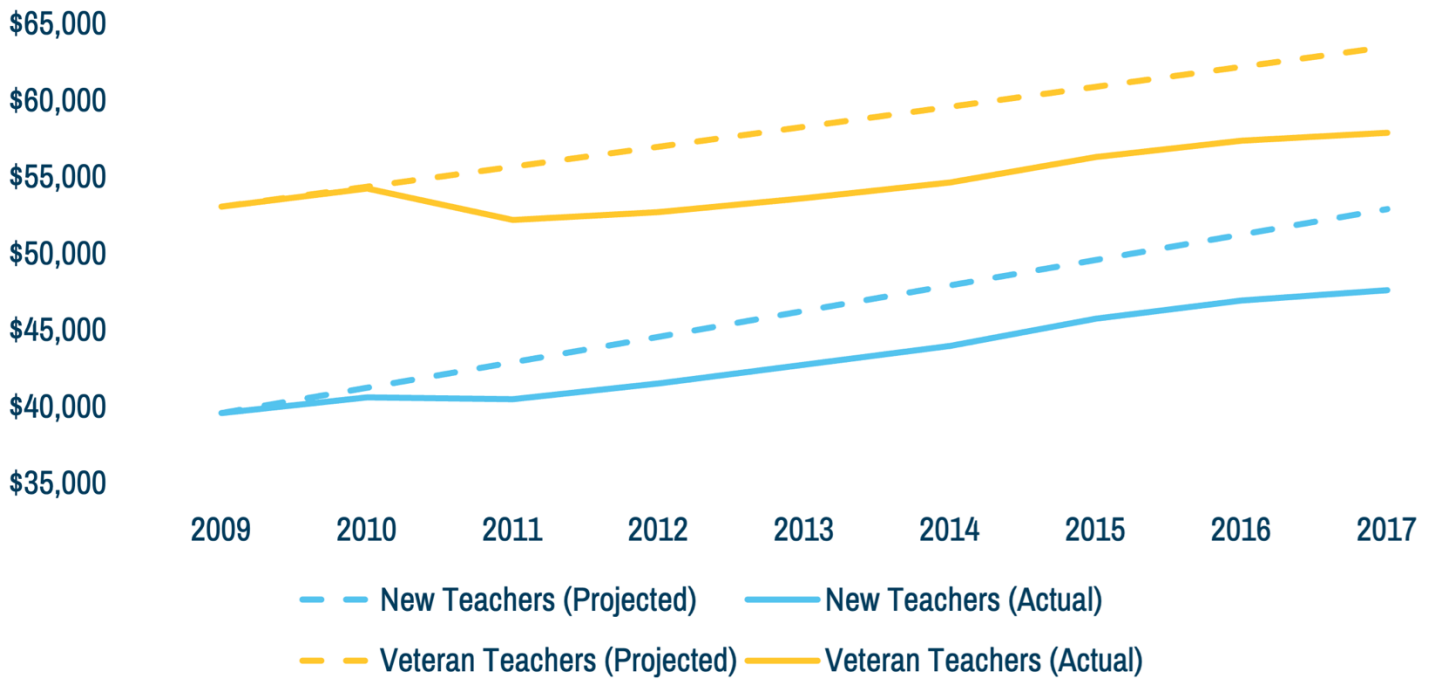
Given that 2009 teachers started out at a higher salary than teachers in 2000, simply comparing them to one another does not fully capture where salaries might have been today if it were not for the recession. In the next two figures, I display the wages of the 2009 cohorts compared to a projected wage growth.

Regular Term vs. Expected Salary for 2009 Missouri Teacher Cohort
(Inflation-Adjusted)



The projections were determined by calculating the average annual raise for new and veteran teachers in the 2000 cohort and then applying those raises to the 2009 cohort's salary in 2009. This allows me to estimate what the 2009 cohort's salary might be if they had maintained the same raise pattern as the 2000 cohort of teachers.

Total Salary vs. Expected Salary for 2009 Missouri Teacher Cohort (Inflation-Adjusted)



When I compare teacher wages to their projected wages, based on the annual raises of an earlier cohort of teachers, current wages appear to have fallen substantially behind. New teachers and veteran teachers from the 2009 cohort were receiving \$4,318 and \$3,776 less in 2017 than they would have received if their earnings trajectory matched that of their earlier peers. The difference climbs to \$5,291 and \$5,300 for new and veteran teachers, respectively, when I examine total salary.

This paper analyzes the impact of the Great Recession on teacher salaries in Missouri. I do this by comparing a cohort of new and veteran teachers pre-recession to a similar cohort of teachers post-recession. While these findings do not control for other issues that may have varied and contributed to salary differences pre- and post-recession, such as possible changes in staffing levels²² or increased cost of pension obligations,²³ the results suggest the recession had a deleterious effect on teacher salaries and that wages had not yet recovered to pre-recession levels by 2017.

This analysis leads to several conclusions. First, when the Great Recession hit, school districts responded to fiscal constraints by freezing teacher wages. As NCTQ (2013) noted in their analysis of 41 large school districts, many districts kept wages down by preventing teachers from receiving a “step” raise on the salary schedule or by adding “phantom” steps.²⁴ Although I do not see the specific mechanism used, I see a clear pause or a slight dip in regular term salaries following the recession. The dip is more pronounced when examining total salaries. Although salaries for the 2009 cohort start higher than the 2000 cohort, this dip lowers post-recession salaries below that of their earlier counterparts.

Following the initial “pause” in salaries following the recession, regular term teacher salaries appear to nearly resume their previous trajectory. This, however, keeps post-recession wages below pre-recession wages. This makes sense when you understand how teacher salaries work. Teachers are on a single salary schedule which maps out how much teachers earn each year. The recession forced school districts to essentially pause wage growth for two years. After this time, districts began allowing teachers to move on the salary

schedule once again. In other words, teachers who worked through the recession are likely two steps on the salary schedule behind where they should be, on average.

Importantly the extra pay teachers receive does not appear to have returned to pre-recession levels. This is highlighted especially in Figure 1, where there is a noticeable decrease in the gap between regular term and total teacher salaries. This could mean one of two things for teachers and students. Either schools have cut extra programs and services that used to generate extra pay for teachers, or they have found cheaper substitutes. In other words, schools may be paying coaches less, relying on fewer coaches, or utilizing volunteers more frequently post-recession. The data appear to indicate that teachers in Missouri have fewer opportunities to earn extra pay for extra duties post-recession. This has not changed for several years and may indicate a new normal.

Although the evidence seems quite clear that teacher salaries did not recover to pre-recession levels prior to the start of COVID-19, the policy implications are not as clear. Yes, teacher salaries dropped as a result of the recession, but so did wages in almost every other sector. Education relies heavily on property taxes and income taxes, both of which were negatively impacted by the recession. One would not expect public education to be uniquely insulated from changes in the larger economy.

Nevertheless, the fact that teacher salaries rose less after the recession than they had been rising pre-recession does not bode well for teacher recruitment. In public opinion polls, the public regularly states that teachers are underpaid.²⁵ Lower relative wages make things even worse. Indeed, they may have contributed to teacher strikes in West Virginia, Arizona, Colorado, Kentucky, North Carolina, and Oklahoma in 2018. And, in turn, those strikes appear to have increased the level of support for increasing teacher pay²⁶.

The analysis here focuses on statewide averages. However, it should be noted that the Great Recession may have had a larger impact on school districts which relied more heavily on state aide. Knight, for instance, finds the Great Recession had a larger negative impact on the finances in higher-need school districts.²⁷ While this question is outside the scope of this paper, it does suggest these findings may be more pronounced in school districts serving students with higher rates of low-income students.

This paper examines trends in teacher pay entering the COVID pandemic and suggests that teacher pay was still suffering from Great Recession a decade earlier. While the effects of COVID on schools, teachers, and public spending will take years to understand, we now know this: teachers were already earning less than they would have projected earlier in their careers. Post-COVID, media are reporting increases in teacher resignations and shortages. While that conversation is certainly more nuanced than can be described here (see Goldhaber & Theobald, 2022), this paper shows the pandemic hit a teaching profession still fiscally reeling from a financial crisis a decade past.

¹ Hurd and Rohwedder, 2010

² Kalleberg and Von Wachter, 2017

³ Ibid.

⁴ Shuls, 2017

⁵ Picus and Odden, 2011, p. 293

⁶ Leachman, Albares, Masterson, and Wallace, 2015

⁷ Ibid.

⁸ Scafdi, 2017

⁹ Chang, 2018

¹⁰ NEA, 2018

¹¹ Simpkins, Roza, and Simburg, 2012, p. 1

¹² Ibid.

¹³ Chakrabarti and Setren, 2011

¹⁴ Chakrabarti and Sutherland, 2013

¹⁵ National Council on Teacher Quality, 2013, p. 1

¹⁶ Goldhaber, Strunk, Brown and Knight, 2016; Nelson and Balu, 2014

¹⁷ Strunk, Goldhaber, Knight and Brown, 2018

¹⁸ Center for State and Local Government Excellence, 2010

¹⁹ Shuls, 2012

²⁰ NCTQ, 2013

²¹ Ibid.

²² Scafidi, 2017

²³ Costrell, Hitt, & Shuls, 2020

²⁴ NCTQ, 2013

²⁵ Cheng, Henderson, Peterson, and West, 2018

²⁶ Ibid.

²⁷ Knight, 2017

References (Alphabetical)

Center for State and Local Government Excellence, (2010), "Survey Findings: The Great Recession and the State and Local Government Workforce." http://slge.org/wp-content/uploads/2011/12/Great-recession-and-govt-workforce_10-150.pdf.

Chakrabarti, R. and Setren, E. (2011), "The impact of the great recession on school district finances: Evidence from New York." Federal Reserve Bank of New York Staff Report, No. 534 (2011). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1979694.

Chakrabarti, R. and Sutherland, S. (2013), "Precarious Slopes? The Great Recession, Federal Stimulus, and New Jersey Schools." *Economic Policy Review* 19: 41-65.

Chang, A. (2018), "Your state's teachers are underpaid. Find out how much." *Vox*. <https://www.vox.com/policy-and-politics/2018/3/9/17100404/teacher-pay-salary-underpaid-database>.

Costrell, R. M., Hitt, C., & Shuls, J. V. (2020). A \$19-Billion Blind Spot: State Pension

Spending. Educational Researcher, 49(3), 220-223.

Goldhaber, D., Strunk, K.O., Brown, N., and Knight, D.S. (2016), "Lessons learned from the Great Recession: Layoffs and the RIF-induced teacher shuffle." Educational Evaluation and Policy Analysis 38, no. 3: 517-548.

Goldhaber, D., & Theobald, R. (2022). Teacher attrition and mobility in the pandemic. Educational Evaluation and Policy Analysis, 01623737221139285.

Kalleberg, A.L. and Von Wachter, T.M. (2017), "The US labor market during and after the Great Recession: Continuities and transformations." The Russell Sage Foundation journal of the social sciences: RSF 3, no. 3: 1.

Knight, D.S. (2017), "Are high-poverty school districts disproportionately impacted by state funding cuts?: school finance equity following the great recession." Journal of Education Finance 43, no. 2: 169-194.

National Council on Teacher Quality, (2013). "The recession's impact on teacher salaries."
https://www.nctq.org/dmsView/The_Recessions_Impact_On_Teacher_Salaries_NCTQ_Report.

National Education Association, (2018). "Rankings of the states 2017 and estimates of school statistics 2018."
http://www.nea.org/assets/docs/180413-rankings_And_Estimates_Report_2018.pdf .

Hurd, M.D. and Rohwedder, S. (2010), "Effects of the financial crisis and great recession on American households." No. w16407. National Bureau of Economic Research.

Nelson, A.A. and Balu, R. (2014), "Local government responses to fiscal stress: Evidence from the public education sector." Public Administration Review 74, no. 5: 601-614.

Picus, L.O. and Odden, A.R. (2011), "Reinventing school finance: Falling forward."
Peabody Journal of Education 86, no. 3: 291-303.

Scafidi, B. (2017). Back to the Staffing Surge: The Great Teacher Salary Stagnation and the Decades-Long Employment Growth in American Public Schools. EdChoice.

Shuls, J. V. (2017). A primer on Missouri's Foundation Formula for K-12 public education (2017 Update). Show-Me Institute, Policy Study, (40). [20161212 - Missouri School Finance Primer - Shuls.pdf](https://www.showmeinstitute.org/20161212-Missouri-School-Finance-Primer-Shuls.pdf) ([showmeinstitute.org](https://www.showmeinstitute.org))

Policy Research in Missouri Education (PRiME) Center
Saint Louis University
033 Fitzgerald Hall
St. Louis, MO 63103



PRiME CENTER

SAINT LOUIS UNIVERSITY

Better evidence, better policy, better schools

E-mail: prime@slu.edu

www.sluprime.org

Twitter: [@sluprime](https://twitter.com/sluprime)

Facebook: PRiME Center at Saint Louis University

LinkedIn: PRiME Center

Who We Are

The Policy Research in Missouri Education (PRiME) Center is a non-partisan research center housed in the Saint Louis University School of Education. Opened in the Spring of 2019, we are wholly committed to conducting and sharing research that leads to better policies, educational outcomes, and opportunities for all students.

What We Do

We conduct and share research on education. We help lawmakers, educators, and families in the state of Missouri make decisions about education policy and practice. Our mission is to ensure that the people making decisions and building policies around education have the relevant data and evidence they need to build the best and most equitable educational systems possible.

About the Authors

James V. Shuls, Ph.D., is an associate professor of educational leadership and policy studies at the University of Missouri-St. Louis. He also serves as the Director of Research and Senior Fellow at the Show-Me Institute. Dr. Shuls' research focuses primarily on teacher labor markets, school finance, and school choice. He has served as an expert witness in the school finance case *Martinez/Yazzie v. New Mexico*. Previously, he taught first and fifth grade in southwest Missouri.